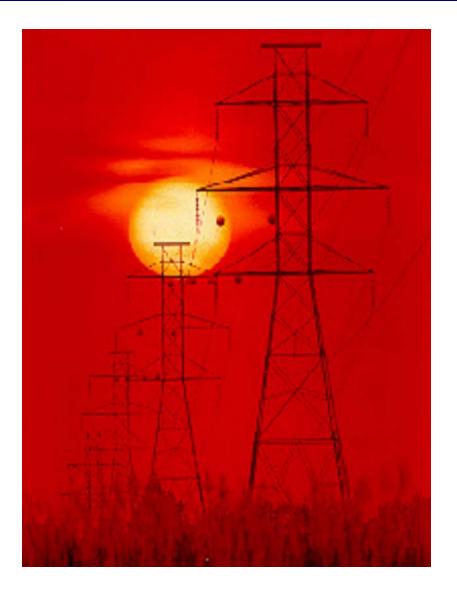




Presented to the 4<sup>th</sup> Annual Transmission Customer/Power Marketers' Meeting by Terry Boston, EVP, Transmission/Power Supply September 27, 2005



#### A New Peak X 2



- 31,703 MW
  - -July 25, 2005 @ 4 p.m. CDT & 94° F

- 31,924 MW
  - -July 26, 2005 @ 4 p.m. CDT & 95° F



#### Perfect Zeros



- System Disturbance & Information Report 7/26/05 (All-Time Peak Day)
  - Disturbances:

0

• Momentaries:

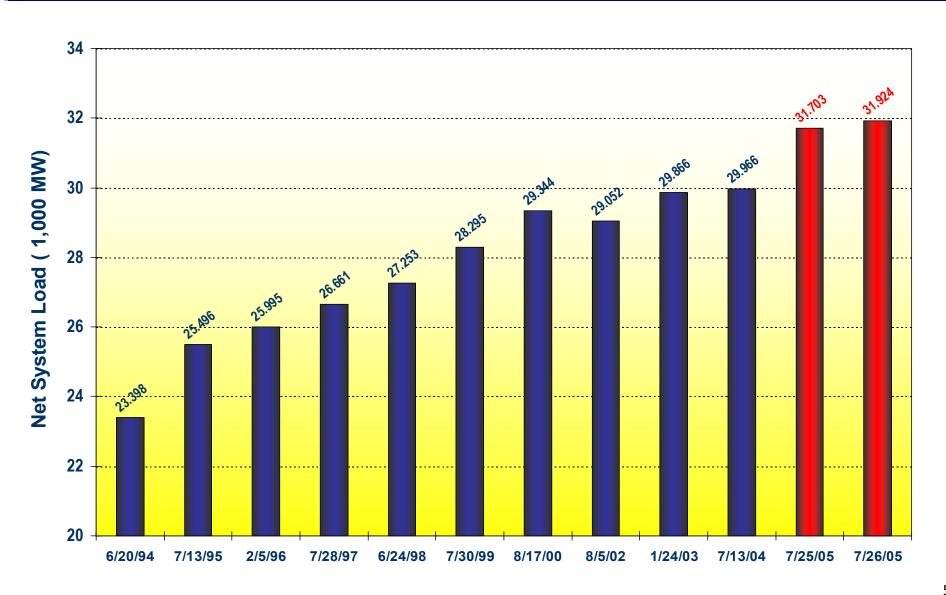
0

• Information:

0



#### **Historic Peak Loads**





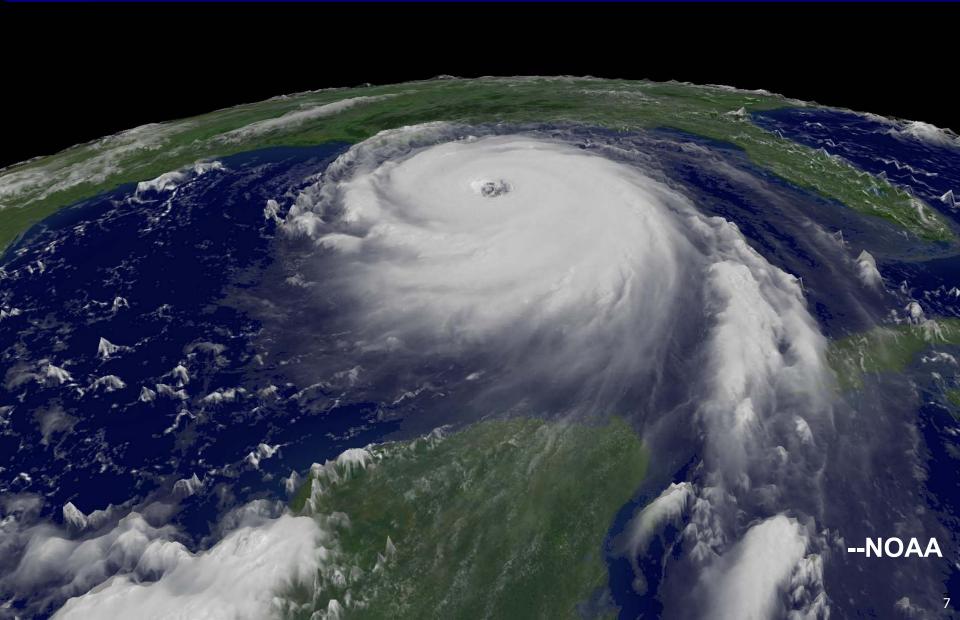
#### **Outstanding Transmission**

#### During the July 26 Peak:

- TVA Supplied 100% of its Firm Load
- No customers were interrupted
- No momentary disturbances were recorded on the system
- Rock solid voltage
- No public appeals to reduce consumption
- TVA provided power to neighboring systems on an emergency basis



# Katrina!





### Responding to a Disaster



- 8 TVA lines (five 161kV & three 46-kV) damaged
- 54 power distributors reported 325,000 customers in the dark
- All TVA customer connection points were restored by 2 p.m. CDT—the day after Katrina struck



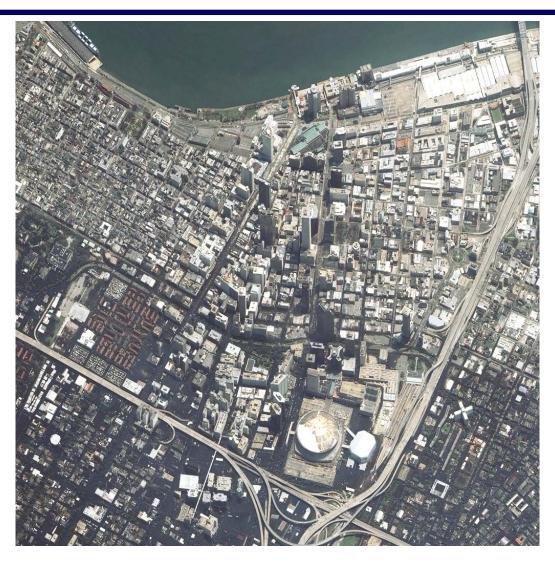
#### Responding to a Disaster

- TVA crews helped restore Central EPA's 46-kV system & helped East Miss. EPA restore Meridian Naval Air Station
- Assembled crews/materials to help neighboring utilities & deployed tree removal contractors
- Provided helicopters to distributors to assess damage





#### Caught in Port of New Orleans



Madison 500 kV Transformers



## Expanding the System

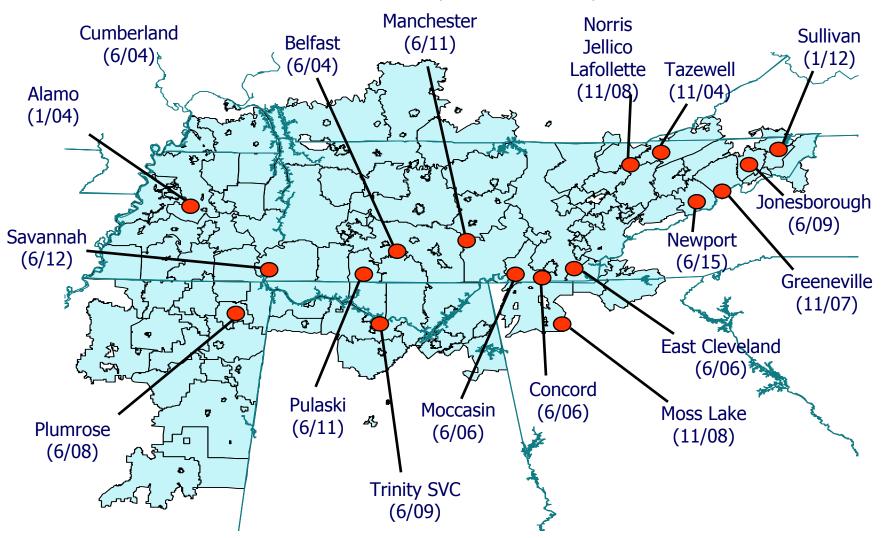


- 18 new delivery points built in FY 2005
- More than 800 miles of new line built over last 8 years
- Building new 500-kV substations – Two 1,200 MVA banks in FY 2005; 3 planned
- Planning new 500-kV lines
- New 161-kV Interconnection to SMEPA
- More than \$1.4 billion invested since 1999



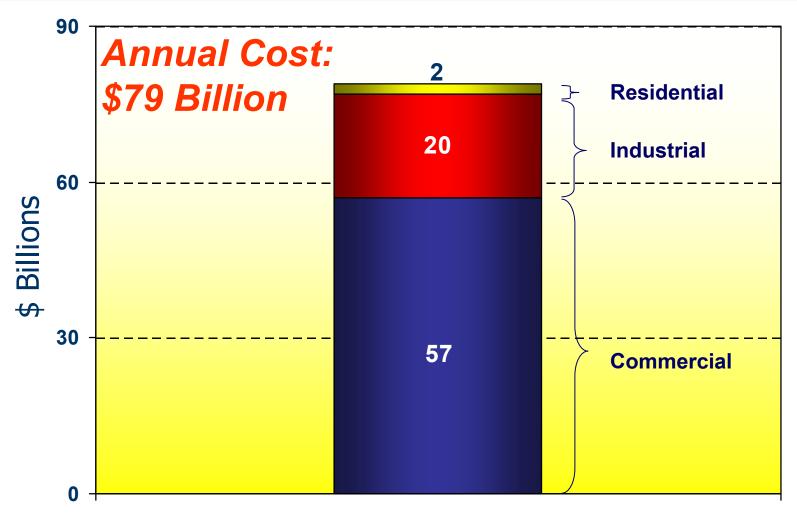
#### **TVA Reactive Support**

10-Year Plan (2004 – 2014)





## Why We Focus on Reliability



Annual Costs of Power Interruptions to the U.S. Economy



#### Where We Focus





#### **TPS**

#### Performs 5 of Top 7

#### MOST DANGEROUS JOBS

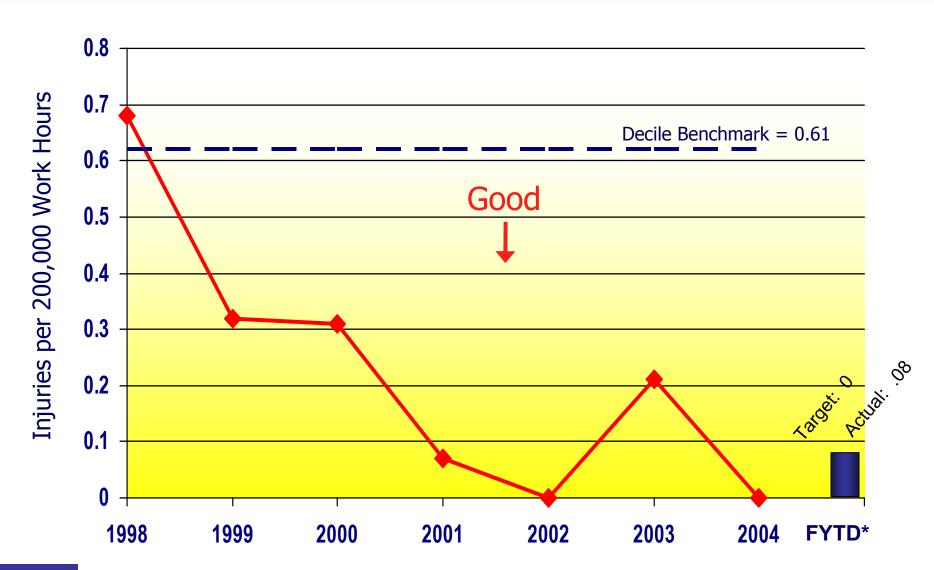
Rank	Occupation	TPS Performs
1	Timber Cutters	YES
2	Fishers	
3	Pilots and Navigators	YES
4	Structural Metal Workers	YES
5	Drivers	YES
6	Roofers	
7	Electrical Power	YES

--Bureau of Labor Statistics, Oct 2003





### Lost-Time Injury Rate







### Lost-Time Injury Benchmark

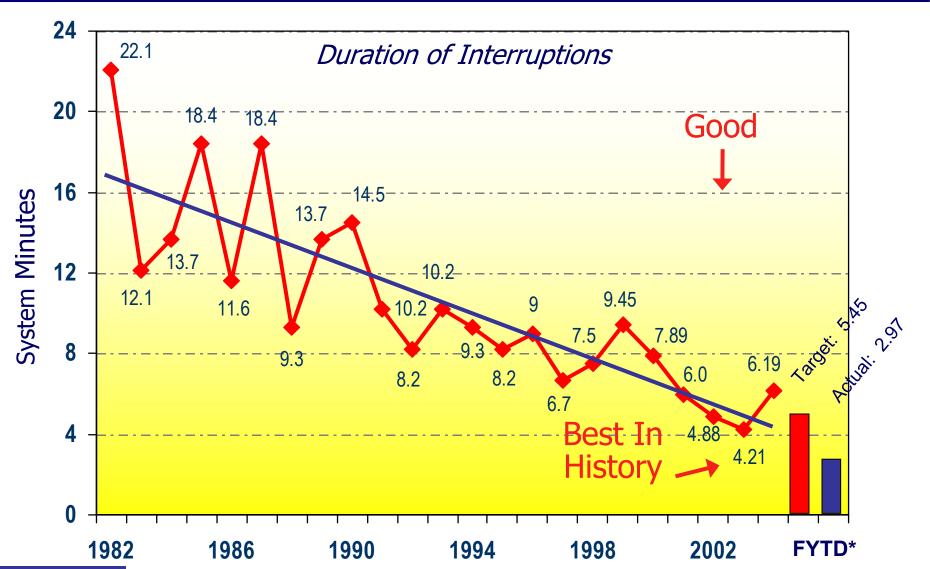






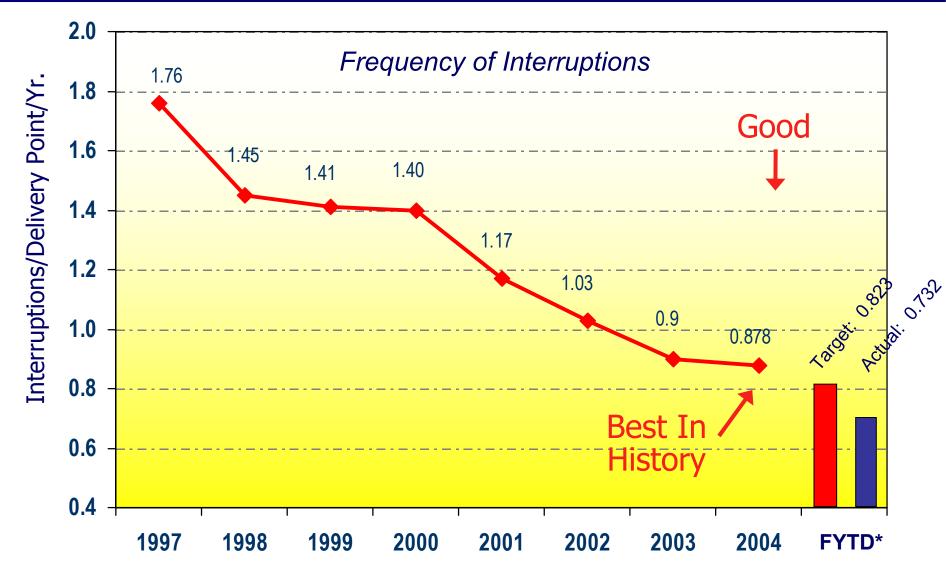


#### Load-Not-Served





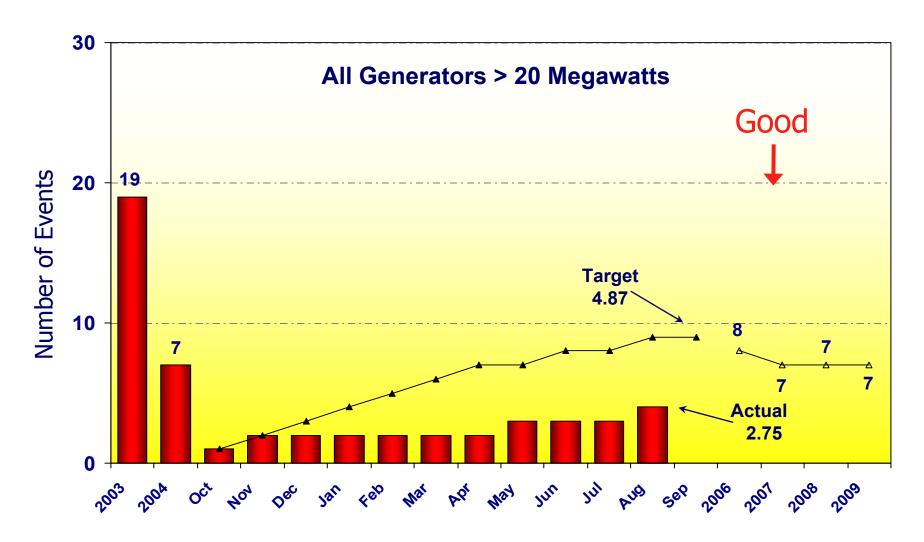
## **Connection Point Interruptions**







#### **Generation Interrupted**





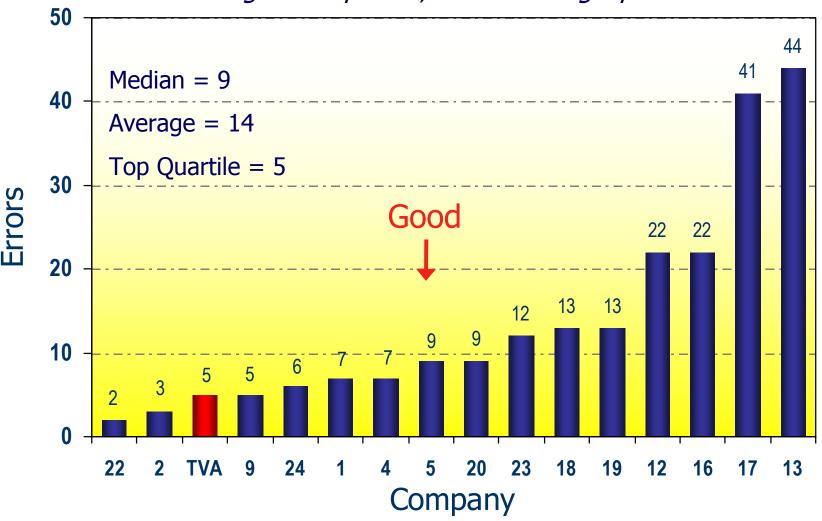
FYTD Actual: Fossil = 3; IPP = 1





#### Human Performance Benchmark



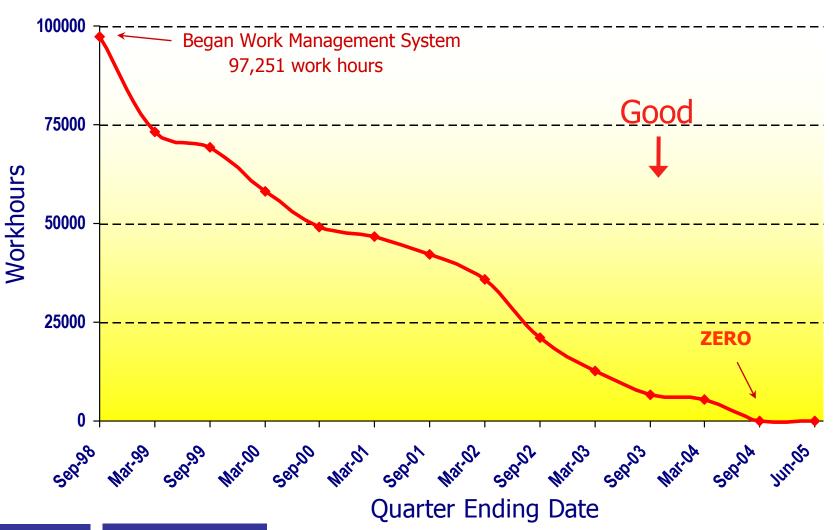








#### Preventive Maintenance Backlog

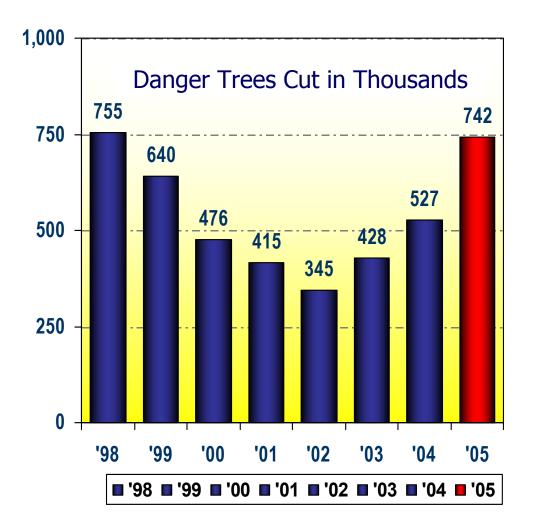




**LOW-COST** 



#### Vegetation Management





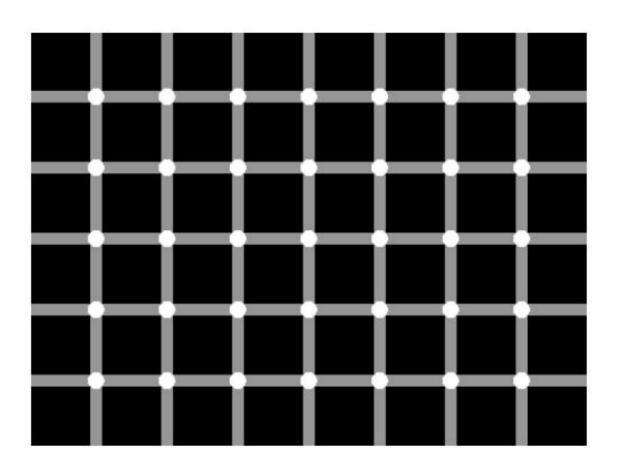






#### Restructuring

Still a Matter of Perspective

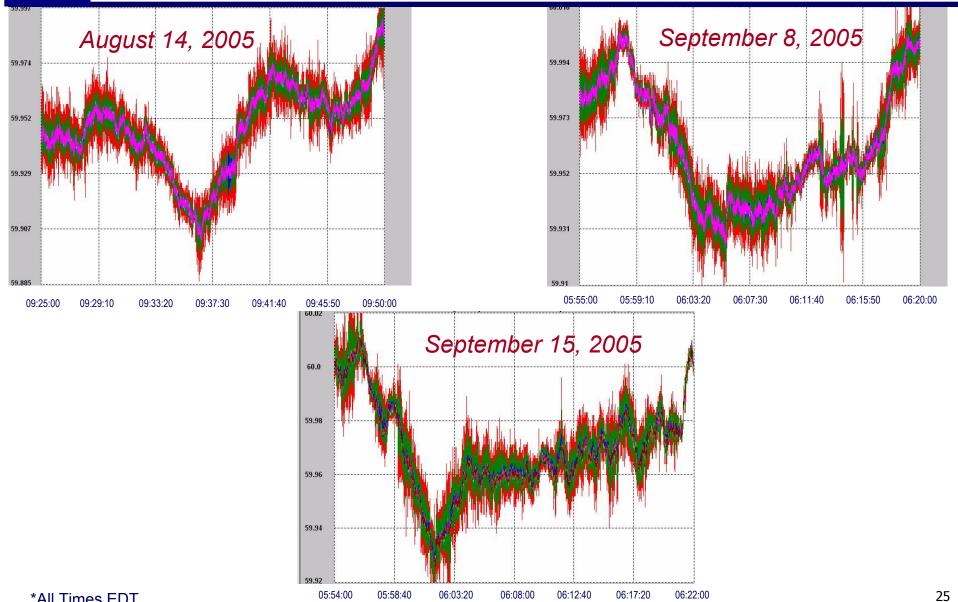


How Many Black Dots?



\*All Times EDT

## Mysterious Drops in Frequency





## Advanced Network Monitoring

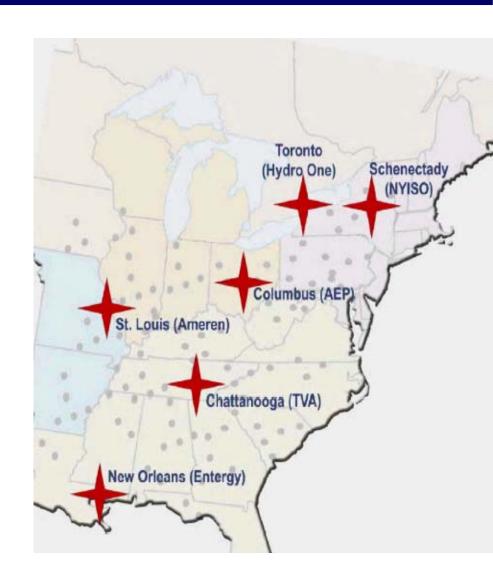


- 2 redundant State Estimators
  - TVA ppRTG footprint -- AREVA
  - TVA "service area" footprint -- Telegyr/Siemens
- Real-time & contingency analysis
- Network model: 5,000 buses
  --over 15,000 measurements
- From State Estimator to "State Measurer" through PMUs



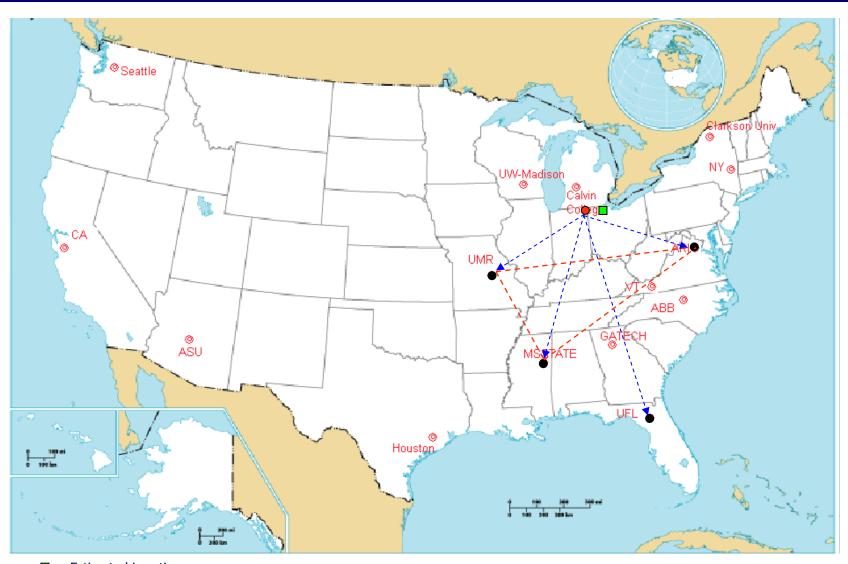
#### Phasor Data Concentrators

- Completed Installations
  - TVA
  - NYISO
  - AEP
  - Ameren
  - Entergy
  - Hydro One
- All installations coordinated with reliability councils & ISOs to serve broad regional needs



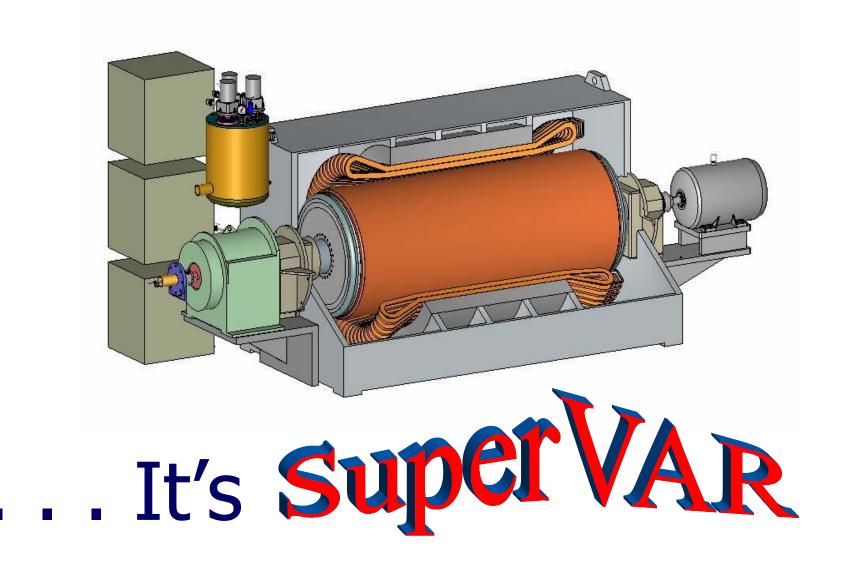


## Triangulating the Location





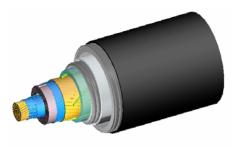
#### R&D Top 100 in the World





## High-Temp Superconductor

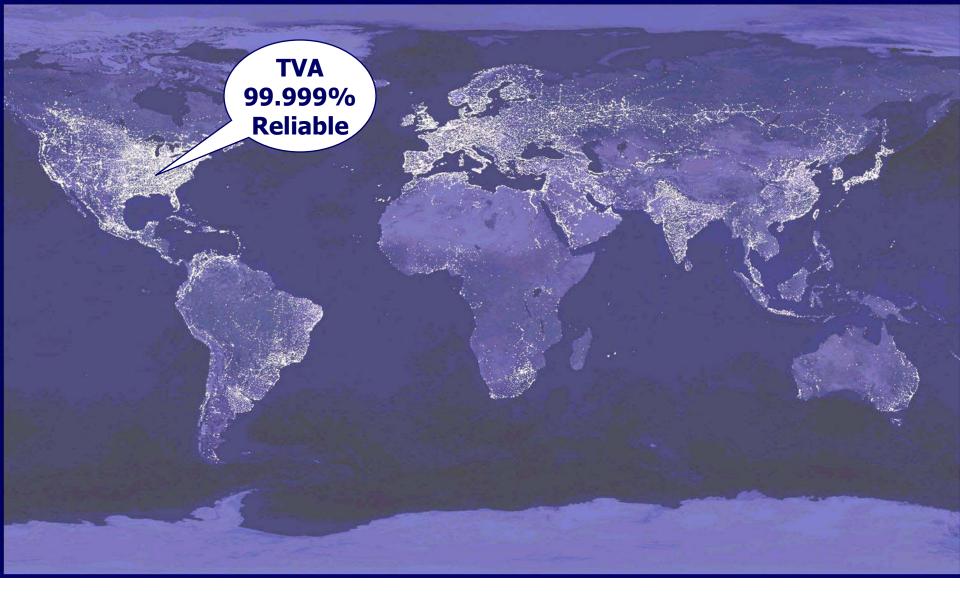






## How It's Developing







Keeping the Lights On & Generating Prosperity You Can See